Installing Sync/ISDN BRI Net Modules in ASN Platforms

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Bay Networks

Bay Networks

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Electromagnetic Emissions

Meets requirements of:

FCC Part 15, Class A
EN 55 022 (CISPR 22:1985), Class A <and Class B>
VCCI Class 1 ITE

Canada Requirements Only

Canada CS-03 Rules and Regulations

Note: The Canadian Department of Communications label identifies certified equipment. The certification means that the equipment meets certain telecommunications network protective operations and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent the degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Canada CS-03 -- Règles et règlements

Note: L’étiquette du ministère des Communications du Canada indique que l’appareillage est certifié, c’est-à-dire qu’il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l’appareillage fonctionnera à la satisfaction de l’utilisateur.

Avant d’installer l’appareillage, s’assurer qu’il peut être branché aux installations du service de télécommunications local. L’appareillage doit aussi être raccordé selon des méthodes acceptées. Dans certains cas, le câblage interne du service de télécommunications utilisé pour une ligne individuelle peut être allongé au moyen d’un connecteur certifié (prolongateur téléphonique). Le client doit toutefois prendre note qu’une telle installation n’assure pas un service parfait en tout temps.

Les réparations de l’appareillage certifié devraient être confiées à un service d’entretien canadien désigné par le fournisseur. En cas de réparation ou de modification effectuées par l’utilisateur ou de mauvais fonctionnement de l’appareillage, le service de télécommunications peut demander le débranchment de l’appareillage.

Pour leur propre sécurité, les utilisateurs devraient s’assurer que les mises à la terre des lignes de distribution d’électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

Canada Requirements Only *(continued)*

D. O. C. Explanatory Notes: Equipment Attachment Limitations

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Notes explicatives du ministère des Communications: limites visant les accessoires

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Canada Requirements Only *(continued)*

Canadian Department of Communications Radio Interference Regulations

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Contents

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About This Guide

Read this guide if you are responsible for installing a Dual Sync/ISDN BRI net module in a Bay Networks™ ASN™ platform. This guide describes how to

- Install a net module (Chapter 1)
- Interpret the LEDs on the net module (Chapter 2)

This guide also describes requirements for cabling the link module (Appendix A) and operating it in Europe (Appendix B).

Conventions

italic text	Indicates variable values in command syntax descriptions, new terms, file and directory names, and book titles.
quotation marks (“ ”)	Indicate the title of a chapter or section within a book.

Acronyms

BRI	Basic Rate Interface
ISDN	Integrated Services Digital Network
LED	light-emitting diode
SELV	safety extra-low voltage
TNV	telecommunications network voltage

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Chapter 1
Installing a Net Module

To install a Dual Sync/ISDN BRI net module in an ASN:

1. Remove the ASN component tray.
2. Attach the antistatic wrist strap.
3. Remove the filler brackets.
4. Remove a net module (if necessary).
5. Install the new net module.
6. Replace the filler brackets.
7. Replace the component tray.

The following sections describe these steps.

Note: Experienced network operators can safely perform the user-serviceable procedures described in this book.

Removing the Component Tray

To remove the component tray:

1. **Power off the ASN.**
2. **Detach all cables from the ASN back panel.**
3. **Using a Phillips screwdriver, loosen the two captive screws that fasten the tray to the chassis (Figure 1-1).**
   a. **Pull the two captive screws and gently slide the tray out of the chassis just a few inches (Figure 1-1).**
   b. **Hold the sides and bottom of the tray to support it, and then slide the tray completely out of the chassis.**

      Try to keep the tray level as you slide it out.
4. **Place the tray on a sturdy work surface.**

Caution: Do not touch any components or boards in the ASN until you have attached an antistatic wrist strap. See the next section, “Attaching the Antistatic Wrist Strap.”

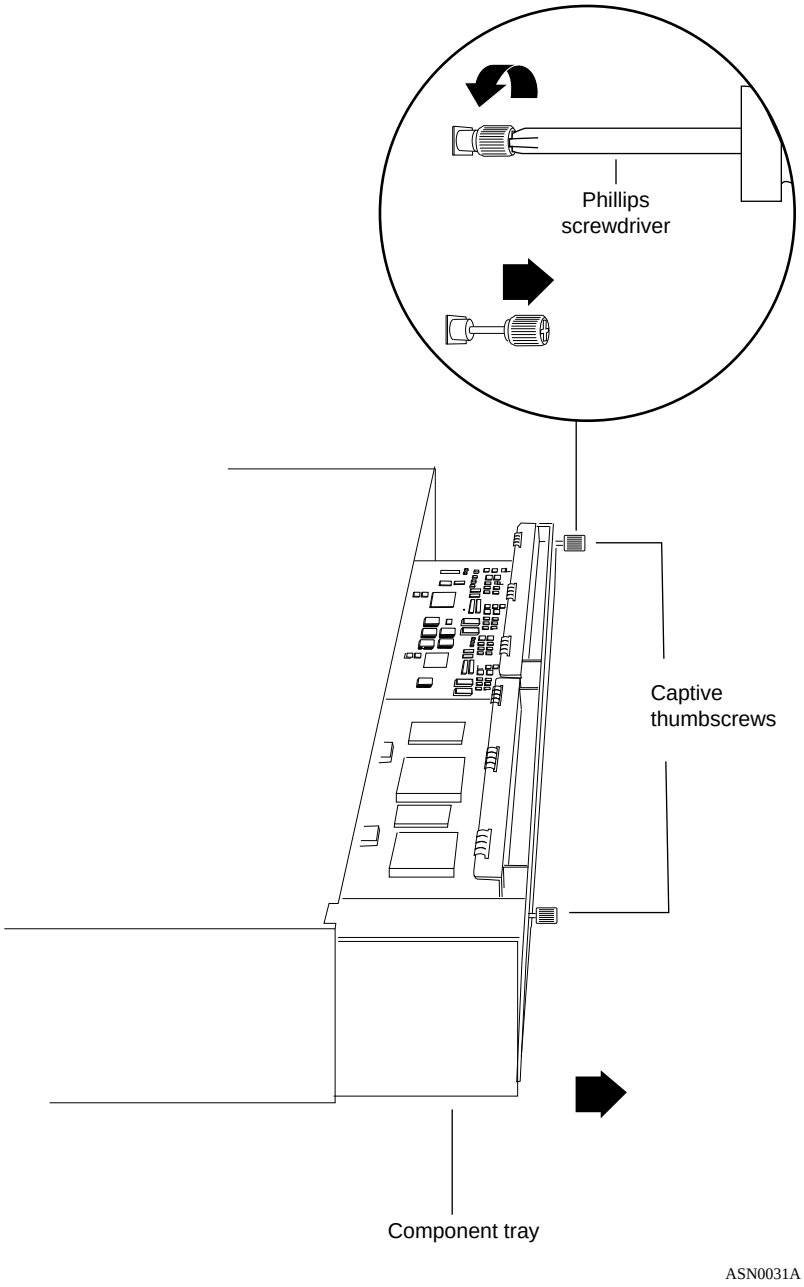


Figure 1-1. Removing the Component Tray

Attaching the Antistatic Wrist Strap

Your ASN comes with an antistatic wrist strap. The antistatic wrist strap directs the discharge of static electricity from your body to the chassis of the ASN, thereby avoiding discharge to sensitive electronic components. You must wear an antistatic wrist strap whenever you remove, install, or handle the net module.

Caution: Electrostatic discharge can damage hardware. Follow the procedure in this section to protect your equipment from damage.

Attach the antistatic wrist strap as follows:

1. **Remove the strap, alligator clip, and cable from their package.**
2. **Attach (snap) the snap end of the cable to the wrist strap.**
3. **Place the strap around your wrist. Adjust the strap to ensure that the metal buckle inside the strap touches your skin.**
4. **Plug the jack at the other end of the cable into the opening on the alligator clip.**
5. **Attach the alligator clip to any unpainted, metal surface on the component tray.**

Removing Filler Brackets

Filler brackets cover empty ASN net module positions and the openings above positions 1 and 3 (Figure 1-2). When you install a net module, you must remove the filler brackets not only from the position in which you want to install the net module, but also from the openings above positions 1 and 3.

Note: This manual refers to the end of the component tray where the net module ports are exposed as the "back end" of the tray. To perform maintenance tasks on the ASN components, you face the back end of the tray.

To remove a filler bracket, grasp its top edges. Then lift the bracket up and toward the front of the tray to release the metal tabs.

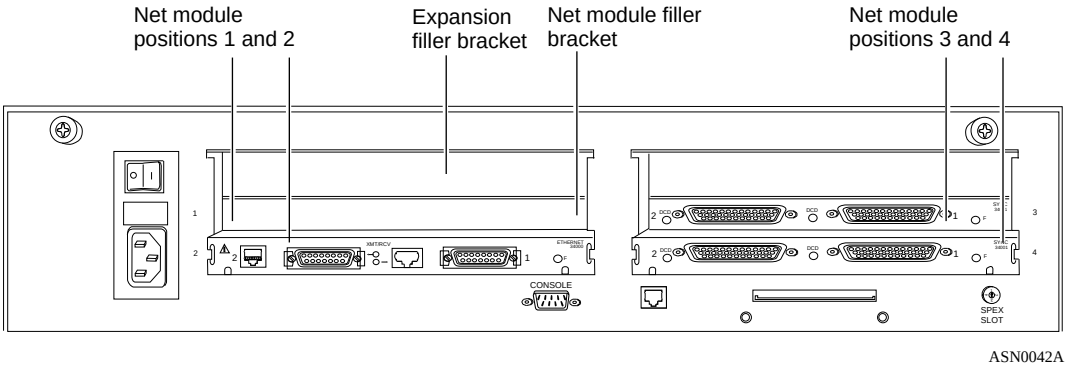


Figure 1-2. Locating Net Modules and Filler Brackets

Removing a Net Module

Read this section if you need to install the net module in a slot that already contains one. To remove a module from position 2 or 4 (Figure 1-2), you must first remove the filler bracket and net module (if any) above it. See the previous section, "Removing Filler Brackets."

Caution: Do not touch any components or boards in the ASN until you have attached the antistatic wrist strap.

To remove a net module:

1. **Grasp the handle on the net module. Use your thumb to push back the white retaining tab (Figure 1-3).**

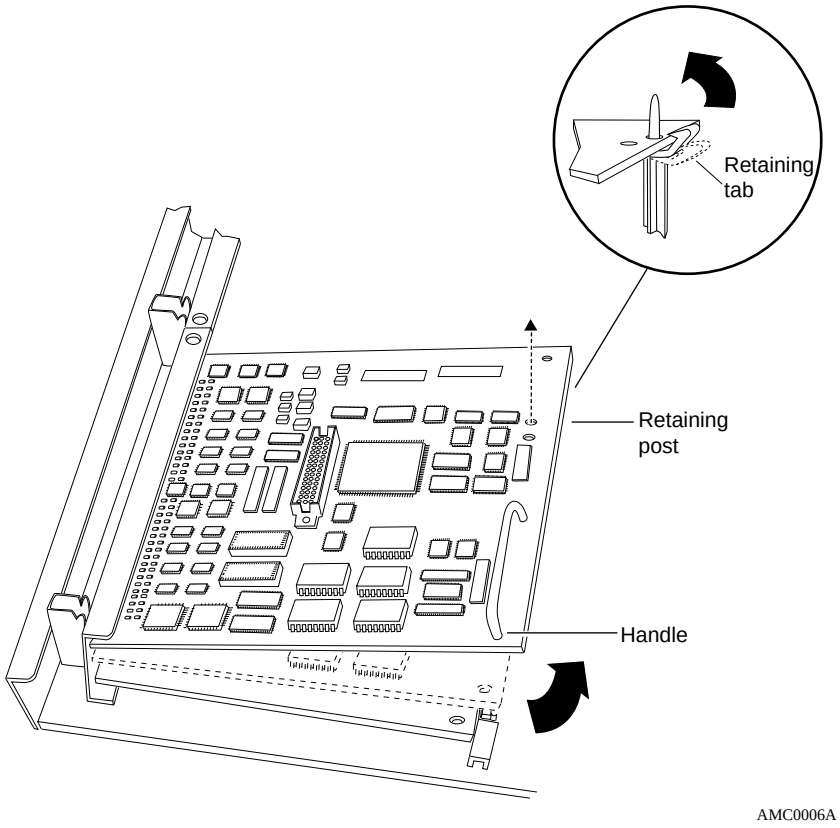


Figure 1-3. Preparing to Remove a Net Module

2. **Pull up to release the module from the connector (Figure 1-4).**

Caution: You must lift the module straight up. If you rock the module back and forth or side to side, you can bend the connector pins. Attempting to reinstall a net module with bent connector pins can damage the power supply.

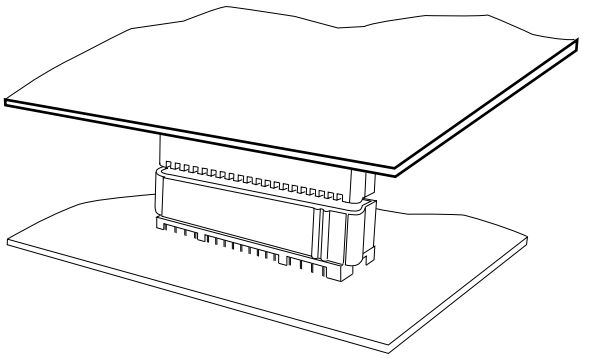


Figure 1-4. Removing a Net Module from the Connector

3. **Lift the module bracket up and toward the front of the tray to release it from the metal tabs that hold it in place (refer to Figure 1-3).**

Installing a Net Module

Before you install the net module, note the following:

- Install the Dual Sync/ISDN BRI net module in position 1 or 3 only (refer to Figure 1-2).
- To install a net module in a position from which you just removed a net module of a different type, you must first delete the old net module from the router's configuration file. Then install the new module in the chassis. For information, refer to *Configuring Routers* if you use router software or *Administration Guide* if you use BayStream software.

To install a net module:

1. **Align the slots at each end of the module bracket with the metal tabs in the net module position that you want to use (Figure 1-5).**

   Do not rest the module bracket on the metal tabs; doing so makes it difficult to align the module connector with the connector on the system board.

2. **Align the module connector with the connector on the system board. Make sure that the white retaining post on the system board goes through the hole in the net module (Figure 1-5).**

Note: If you accidentally turn the white retaining post on the system board, it will not go through the hole in the net module. In this case, turn the post so that its rectangular base is perpendicular to the net module connectors on the system board.

3. **Firmly press the handle on the net module so that the net module is secure in its connector on the system board. Make sure that the white retaining tab snaps into place.**
4. **Press down on the module bracket so that it rests on the metal tabs.**

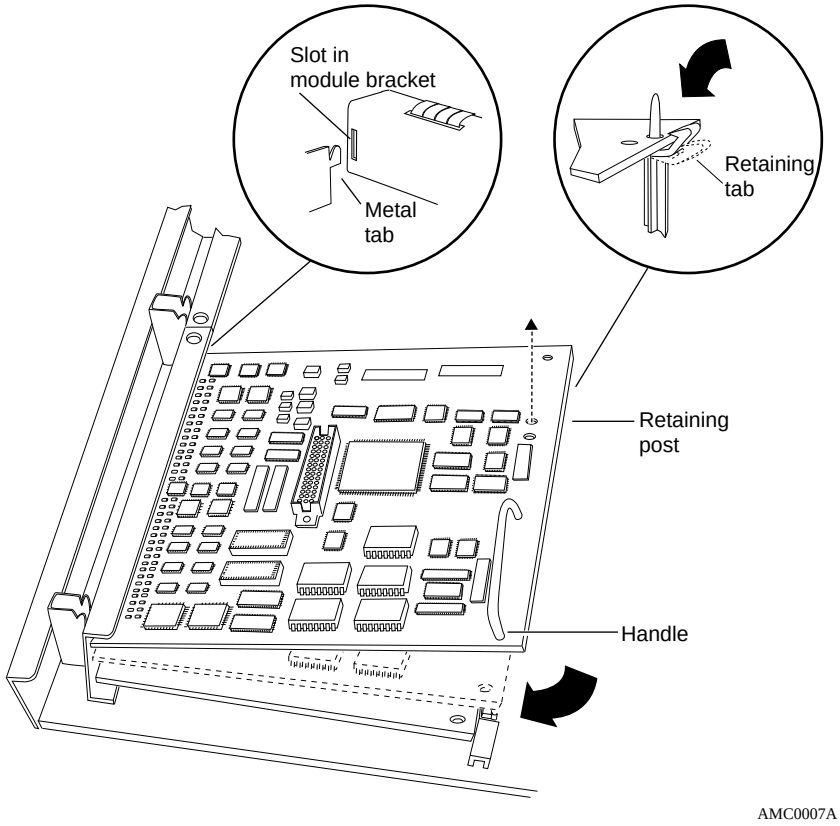


Figure 1-5. Aligning a Net Module

Installing a Filler Bracket

Install filler brackets in any unused net module positions. You must replace the filler brackets that fill the openings above positions 1 and 3.

Note: The filler brackets you use above positions 1 and 3 are different from those for positions 1 through 4. To fill the openings above positions 1 and 3, make sure that you use the brackets labeled “Expansion Filler” (refer to Figure 1-2).

To install a filler bracket:

1. **Align the slots at each end of the bracket with the metal tabs of the position where you are installing the bracket (Figure 1-6).**

   Make sure that the edge of the bracket labeled “Top Surface” faces up.

2. **Position the bracket so that it rests on the metal tabs.**

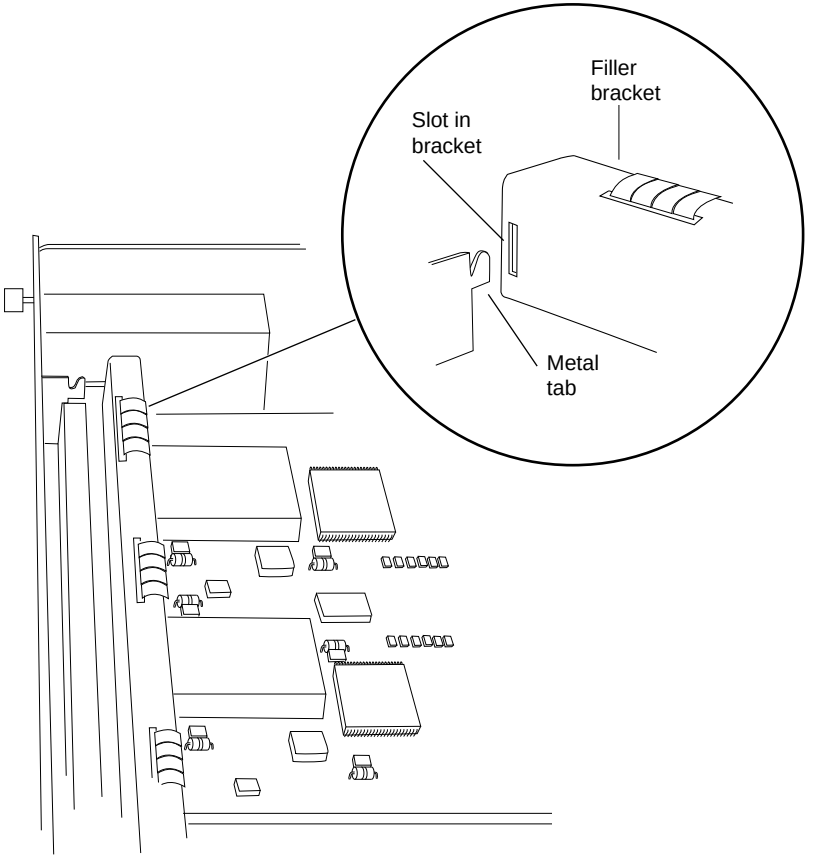


Figure 1-6. Installing a Filler Bracket

Replacing the Component Tray

Before you replace the component tray, remove the alligator clip of the antistatic strap from the chassis. Then remove the antistatic wrist strap from your wrist.

To replace the component tray:

1. **Gently slide the tray into the chassis.**
2. **Use a Phillips screwdriver to tighten the two captive screws that fasten the tray to the chassis (refer to Figure 1-1).**
3. **Reattach the cables to the proper connectors on the back panel.**

See Chapter 2 for information about the LEDs on the net module.

Chapter 2
Checking the Dual Sync/ISDN BRI Net Module LEDs

Figure 2-1 shows the Dual Sync/ISDN BRI net module and Table 2-1 describes the LEDs.

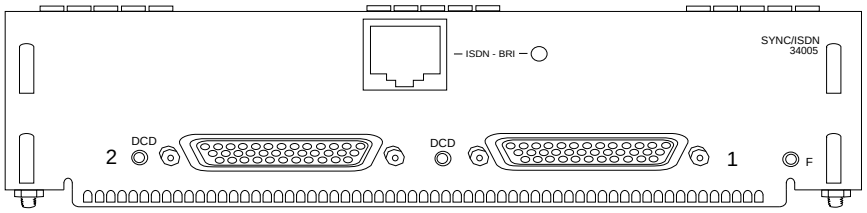


Figure 2-1. Dual Sync/ISDN BRI Net Module LEDs

Table 2-1. Functions of the Dual Sync/ISDN BRI Net Module LEDs

LED	Function
DCD1	Indicates that data carrier detect is present on the COM1 port.
DCD2	Indicates that data carrier detect is present on the COM2 port.
F (FAIL)	Lights during power-up, and might flash during diagnostic testing. The FAIL LED turns off once the diagnostics complete successfully and the router boots. The LED remains lit if the net module or any connector on the net module fails diagnostics. In this case, the DIAG LED on the ASN front panel will also be on.
ISDN BRI	Lights when the interface is active, and turns off when the interface is inactive.

Appendix A
Cabling Requirements for the Dual Sync/ISDN BRI Net Module

This appendix provides technical information about the cabling requirements for the Dual Sync/ISDN BRI net module.

Dual Sync Net Module Cabling Requirements

V.28 compliance requires the use of an Order No. 7837 cable.

V.35 compliance requires the use of an Order No. 7220 cable.

X.21 compliance requires the use of an Order No. 7224 cable.

Refer to the following tables and illustrations for cabling information.

Table A-1. 44-Pin to V.28 Interface Cable (Order No. 7837)

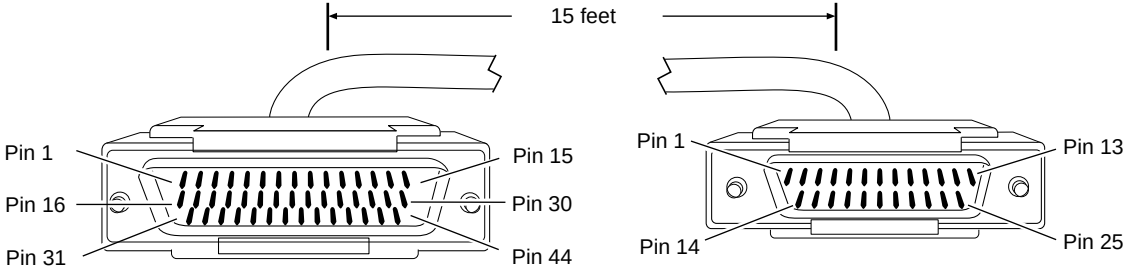
Bay Networks Termination		**Remote Termination**	
Pin	**Signal**	**Pin**	**Signal**
1	Frame Ground	1	Frame Ground
2	Send Data+	2	Send Data
3	Receive Data+	3	Receive Data
4	Request to Send+	4	Request to Send
5	Clear to Send+	5	Clear to Send
6	Data Set Ready+	6	Data Set Ready
8	Data Terminal Ready+	20	Data Terminal Ready
9	Data Carrier Detect+	8	Data Carrier Detect
10	Send Timing+	15	Send Timing
11	Receive Timing+	17	Receive Timing
12	Transmitter Signal Element Timing+	24	Transmitter Signal Element Timing
7	Signal Ground	7	Signal Ground
Local Wire Connections			
Pin 7 →19 → 20 → 23			
Pin 13 → 28			
Pin 14 → 29			

Table A-2. 44-Pin to V.35 Interface Cable (Order No. 7220)

Bay Networks Termination		Remote Termination	
Pin	**Signal**	**Pin**	**Signal**
38	VSD+	P	Send Data A
36	VSD-	S	Send Data B
34	VRT+	V	Receive Timing A
33	VRT-	X	Receive Timing B
32	VST+	Y	Send Timing A
31	VST-	AA	Send Timing B
37	VRD+	R	Receive Data A
35	VRD-	T	Receive Data B
6	Data Set Ready+	E	Data Set Ready
8	Data Terminal Ready+	H	Data Terminal Ready
4	Request to Send+	C	Request to Send
5	Clear to Send+	D	Clear to Send
40	VTT+	U	Terminal Timing A
39	VTT-	W	Terminal Timing B
1	Frame Ground	A	Frame Ground
9	Data Carrier Detect+	F	Data Carrier Detect
19	Signal Ground	B	Signal Ground
Local Wire Connections			
Pin 19 → 20 → 23 → 7			
Pin 41 → 42 → 43			
Pin 13 → 28			
Pin 14 → 29			

Table A-3. 44-Pin to X.21Interface Cable (Order No. 7224)

Bay Networks Termination		Remote Termination	
Pin	**Signal**	**Pin**	**Signal**
2	Send Data+	2	Transmitted Data A
16	Send Data-	9	Transmitted Data B
4	Request to Send+	3	Control A
18	Request to Send-	10	Control B
3	Receive Data+	4	Receive Data A
17	Receive Data-	11	Receive Data B
9	Data Carrier Detect+	5	Indication A
23	Data Carrier Detect-	12	Indication B
10	Send Timing+	6	Timing A
24	Send Timing-	13	Timing B
7	Signal Ground	8	Signal Ground
1	Frame Ground	1	Frame Ground
Local Wire Connections			
Pin 41 → 43			
Pin 28 → 30			
Pin 14 → 15			



44-position D-sub plug with screw locks
(ground shield connected to backshell)

25-position D-sub plug with M-3 jack screws
(ground shield connected to backshell)

CAB0069B

Figure A-1. Cable Order No. 7837

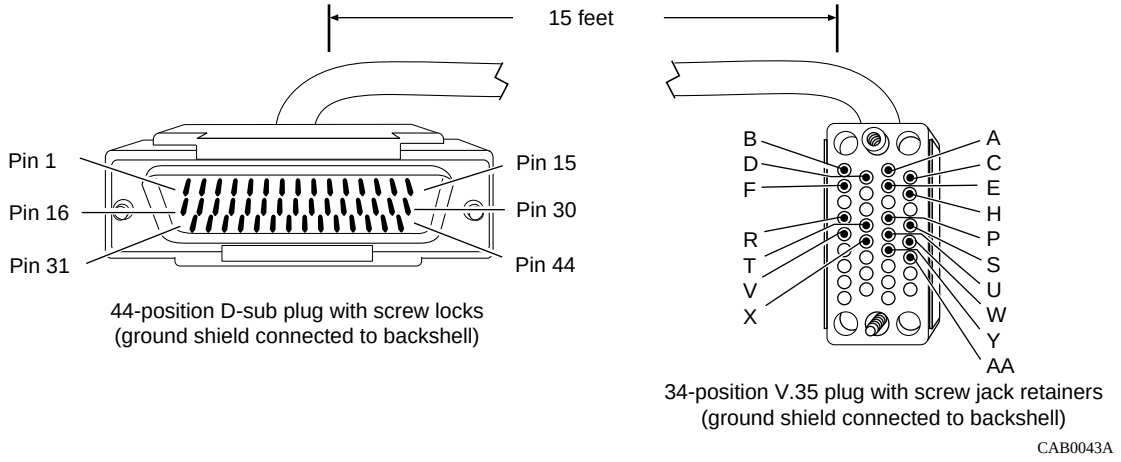


Figure A-2. Cable Order No. 7220

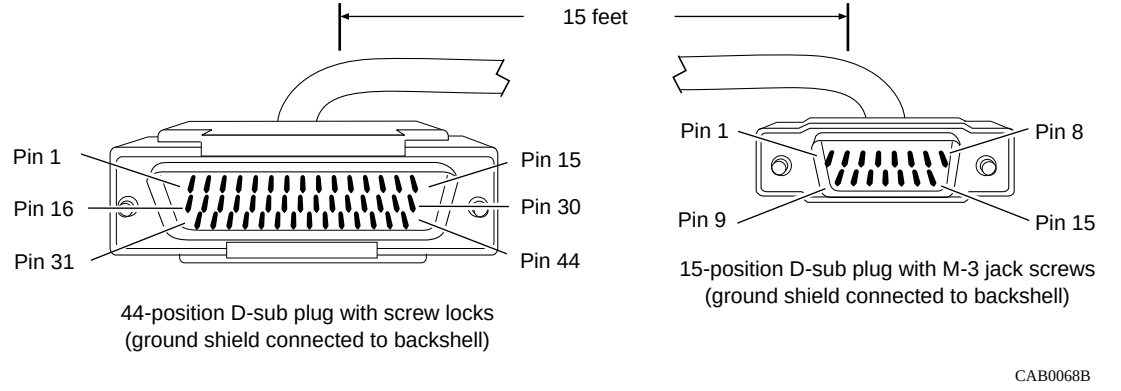


Figure A-3. Cable Order No. 7224

ISDN BRI Connector Pinouts

Table A-4 lists the ISDN BRI connector pinouts.

Table A-4. ISDN BRI Connector Pinouts

Pin	Signal
1	No connection
2	No connection
3	Tx +
4	Rx +
5	Rx -
6	Tx -
7	No connection
8	No connection

Appendix B
Requirements for European Operation

This appendix provides technical specifications and notes about operating the Dual Sync/ISDN BRI net module (Order No. 34005, Part No. 109356) in Europe.

Installation Requirements

The net module is approved only for installation in a host, and with host attachments, which are either type approved for such apparatus or, if supplied after March 1, 1989, are marked with or supplied with a statement that the host is supplied under the terms of General Approval No. NS/G/1234/J/100003.

Installation of the net module in an ASN will satisfy the conditions stated in this appendix. The ASN is supplied under the terms of General Approval No. NS/G/1234/J/100003.

Power Requirements

The net module is powered from the host chassis and has the power requirements shown in Table B-1.

Table B-1. Net Module Power Requirements

Voltage	Amperage
+5 V	5 A
+12 V	0.75 A
-12 V	0.75 A

The power drawn from the host chassis combined with that required for any other cards and accessories must be within the power rating of the host chassis.

You must install the net module so as not to impair the integrity of the network protection from hazardous voltages used or generated internally by the host chassis.

Clearances and Creepage Distances

The clearances and creepage distances (shown as X and Y, respectively, in Table B-2 and Figure B-1) must be maintained between the card and

- The host chassis in which it is installed
- Any adjacent cards installed in the host chassis

The exception to this rule is the edge connector, which is located in the host chassis backplane, where no minimum distance applies.

The creepage distances apply to the normal office environment. When the local environment within the host chassis is subject to conductive pollution or dry nonconductive pollution that could become conductive due to condensation, the creepage distances shown in parentheses in Table B-2 will apply.

Table B-2. Net Module Clearances and Creepage Distances

Clearance (X)	Creepage (Y)	Voltage used or generated by other parts of the host or expansion card
2.0 mm	2.4 (3.8) mm	Up to 50 V rms or V dc
2.6 mm	3.0 (4.8) mm	Up to 125 V rms or V dc
4.0 mm	5.0 (8.0) mm	Up to 250 V rms or V dc
4.0 mm	6.4 (10.0) mm	Up to 300 V rms or V dc

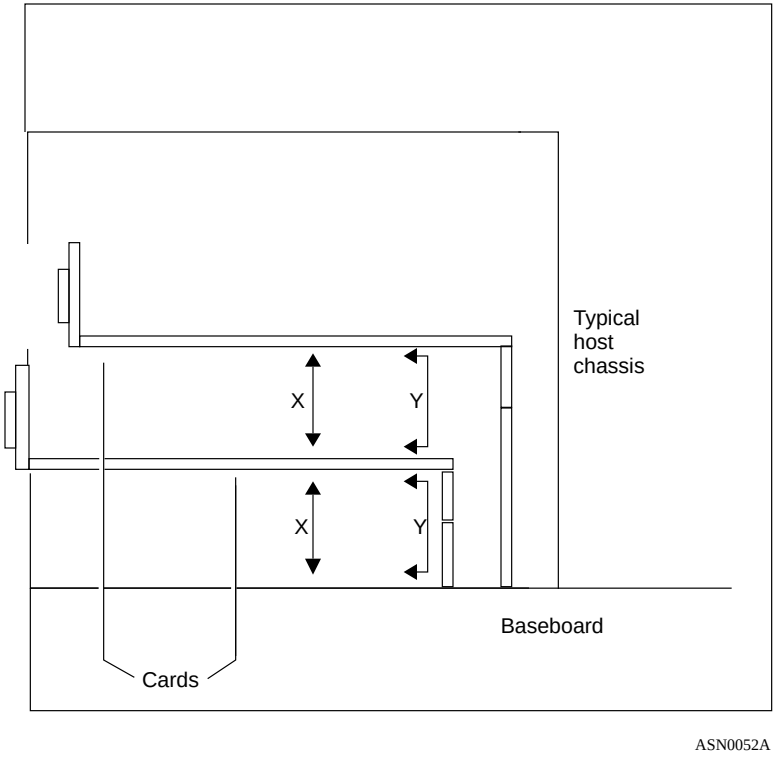


Figure B-1. Clearances and Creepage Distances

The clearance and creepage distance between adjacent points should be checked as follows (Figure B-1):

- The clearance distance (X) is the shortest distance measured between two points through the air.
- The creepage distance (Y) is the shortest distance between two points measured across a surface.

You should obtain advice from a competent telecommunications safety engineer if in doubt.

Failure to install the net module according to these instructions will invalidate the Approval.

Dual Sync/ISDN BRI Net Module Safety Status

Table B-3 lists the safety status of interconnection points to the connection of other equipment.

Table B-3. Dual Sync/ISDN BRI Safety Status

Port Location	Port Description	Type of Circuit
COM1	V.28, X.21, V.35	Telecommunications network voltage(TNV)
COM2	V.28, X.21, V.35	TNV
P1	Host Port	Safety extra-low voltage (SELV)
P2	Host Port	SELV
ISDN	BRI ISDN	TNV
P6	Host Port	SELV